

AD-A104 225

MITRE CORP MCLEAN VA METREK DIV
EVALUATION OF SHORT-TERM BIOASSAYS TO PREDICT FUNCTIONAL IMPAIR--ETC(U)
OCT 80 P GREENAWAY, J KONZ
WP-79W00681

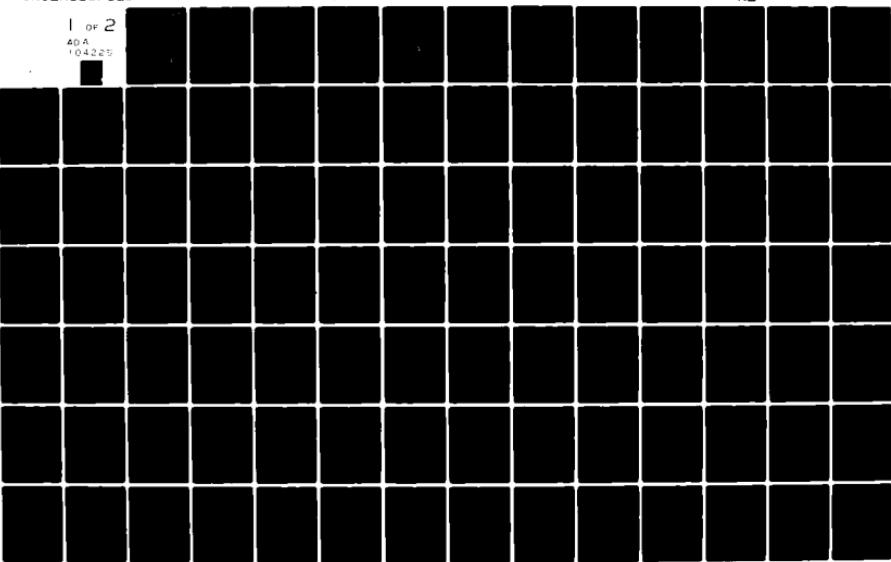
F/G 6/20

DAMD17-78-C-8068

NL

UNCLASSIFIED

1 of 2
20
104225



AD A104225

LEVEL II

AD

(12)

EVALUATION OF SHORT-TERM BIOASSAYS TO PREDICT FUNCTIONAL IMPAIRMENT,

Development of Neurobehavioral Bioassays in Laboratory Animals

Directory of Institutions/Individuals Final Report

(10) Purna Greenaway, James Konz

11 Oct 1980

(12) 106

Supported by
US Army Medical Research and Development Command
Fort Detrick, Frederick, Maryland 21701

Contract No/DAMD17-78-C-8068

(15) 106
The MITRE Corporation
1820 Dolley Madison Boulevard
McLean, Virginia 22102

Contracting Officer's Technical Representative: Mary C. Henry, Ph.D.
US Army Medical Bioengineering Research and Development Laboratory
Fort Detrick, Maryland 21701

DTIC
ELECTED
S SEP 10 1981 D
D

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED

The findings in this report are not to be construed as an official Department of the Army position
unless so designated by other authorized documents.

4 9 10
J 9 28 11

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
AD-A104225		
4. TITLE (and Subtitle) EVALUATION OF SHORT-TERM BIOASSAYS TO PREDICT FUNCTIONAL IMPAIRMENT, Development of Neurobehavioral Biossays in Laboratory Animals, Directory of Institutions/Individuals, Final Report		5. TYPE OF REPORT & PERIOD COVERED Final Directory - September 1978-July 1980
7. AUTHOR(s) Purna Greenaway James Konz		6. PERFORMING ORG. REPORT NUMBER WP-79W00681 ✓ 8. CONTRACT OR GRANT NUMBER(s) DAMD 17-78-C-8068 L
9. PERFORMING ORGANIZATION NAME AND ADDRESS The MITRE Corporation 1820 Dolley Madison Boulevard McLean, Virginia 22102		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 61102A.3E161102BS04.00.046
11. CONTROLLING OFFICE NAME AND ADDRESS U.S. Army Medical Research and Development Command Fort Detrick, Frederick, MD 21701		12. REPORT DATE October 1980 13. NUMBER OF PAGES 103
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) U.S. Army Medical Bioengineering Research and Development Laboratory Fort Detrick, MD 21701		15. SECURITY CLASS. (of this report) Unclassified 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Neurobehavioral toxicity Neurological tests Compounds tested Directory Physiological tests Toxic substances Research organizations Morphological tests Sensory tests Test systems utilized Motor tests		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This directory catalogues the organizations currently engaged in neurobehavioral bioassay utilization or development and provides information concerning specific measurements performed, test systems employed and compounds tested for the U.S. Army Medical Bioengineering Research and Development Laboratory. P		

EXECUTIVE SUMMARY

The MITRE Corporation, Metrek Division, is currently assisting the United States Army Medical Bioengineering Research and Development Laboratory (USAMBRDL) in the development of a hierarchical short-term testing scheme for screening substances for functional or morphological impairment in animal test systems. Effects in several organ systems are being considered.

As part of this effort, Metrek has been requested to prepare a directory of organizations and individuals presently involved in development and/or utilization of tests applicable to toxicity screening in the organ systems. The directory of organizations and individuals involved in neurobehavioral testing has been completed and is presented in the following pages.

There are entries in this directory for each organization currently involved in neurobehavioral bioassay use or development. For each entry at least one individual's name appears under the organization name and address at the top of the page. These are the people who, during the process of directory compilation, described either their activities or the activities of their group regarding neurobehavioral testing, and thereby provided the information presented in the entry. The information provided includes the specific tests performed (e.g., sensory, motor, arousal deficits), the test systems utilized (e.g., cats, dogs), and the substances (e.g., heavy metals, pesticides) administered to elicit neurobehavioral response.

In order to facilitate use and the processes of amending and adding to the directory, it has been arranged in alphabetical order by organization.

The objective of this directory is to provide a readily usable guide to that segment of the scientific community currently active in neurobehavioral testing in small animals. Because research associate and graduate student positions are often temporary in nature, a deliberate attempt was made to exclude these individuals from the directory. Their efforts, however, are likely to be represented by activities associated with their organization, as in most cases these individuals are conducting research under the auspices of someone more senior and more permanently allied with the organization, who was included in the directory. In addition, there are individuals who were active in neurobehavioral function testing at one time but are no longer; these have been omitted from the directory also.

Some of the entries in this directory may be less detailed, and less specific in the detail that is presented, than others. In addition, the information presented for an organization may not be reflective of all the neurobehavioral efforts ongoing at that organization. This is due largely to the reluctance of some individuals contacted to communicate the information and, in small part, to an inability to contact a few individuals at the time this directory was being compiled.

FOREWORD

This Directory was compiled by MITRE staff by means of a survey of the recent literature, and by discussions with leaders in the field and other personal contacts. We are grateful to all those who responded so patiently to our questions regarding their activities. All of the "contact persons" were given an opportunity to review the information relating to their organization. We recognize there may be inadvertent omissions for which we offer our sincere apologies.

Citations of organizations and trade names in this report do not constitute an official Department of the Army endorsement or approval of the products or services of these organizations.

Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification _____	
By _____	
Distribution/ _____	
Availability Codes	
Dist	Avail and/or Special
A	

DTIC
ELECTED
SEP 16 1981
S D
D

TABLE OF CONTENTS

	<u>Page</u>
EXECUTIVE SUMMARY	1
FOREWORD	3
DIRECTORY OF ORGANIZATIONS CURRENTLY INVOLVED IN UTILIZATION OR DEVELOPMENT OF NEUROBEHAVIORAL TESTS IN LABORATORY ANIMALS	7
APPENDIX A - INDEX OF INDIVIDUALS IN THE DIRECTORY	93
APPENDIX B - INDIVIDUALS UNAVAILABLE FOR COMMENT BUT LIKELY TO BE ACTIVE IN NEUROBEHAVIORAL TESTING	103

**DIRECTORY OF ORGANIZATIONS CURRENTLY INVOLVED IN
UTILIZATION OR DEVELOPMENT OF NEUROBEHAVIORAL
TESTS IN LABORATORY ANIMALS**

**DIRECTORY OF ORGANIZATIONS CURRENTLY INVOLVED IN
UTILIZATION OR DEVELOPMENT OF NEUROBEHAVIORAL
TESTS IN LABORATORY ANIMALS**

ORGANIZATION:

ALBERT EINSTEIN COLLEGE OF MEDICINE
INSTITUTE OF NEUROTOXICOLOGY
BRONX, NEW YORK 10461

D. CROW, ADMINISTRATOR (212) 430-2000, 430-2519

TESTS PERFORMED:

INDUSTRIAL WORK IS CONFIDENTIAL

TESTS ON MONKEYS ARE MAINLY BEHAVIORAL AND NEUROPHYSIOLOGICAL;
TESTS ON OTHER ANIMALS ARE MAINLY MORPHOLOGICAL

TEST SYSTEMS UTILIZED:

RATS, CATS, MONKEYS, CHICKENS

COMPOUNDS TESTED:

ACRYLAMIDE; ARSENIC; ADRIAMYCIN; AETT* (FRAGRANCE COMPOUND);
n-HEXANE; n-BUTYL METHYL KETONE

REMARKS:

H. SCHAMBURG and M. SABRI ARE ALSO INVOLVED IN NEURO-
TOXICOLOGICAL TESTING AT THIS ORGANIZATION.

* ACETYLETHYL TETRAMETHYLTETRALIN

ORGANIZATION:

ALBERT EINSTEIN COLLEGE OF MEDICINE
BRONX, NEW YORK 10461

M. SABRI (212) 430-3359

TESTS PERFORMED:

BIOCHEMICAL TESTS: TESTS FOR ENZYMES AND PROTEINS
MORPHOLOGICAL TESTING
BEHAVIORAL TESTS: CLINICAL SYMPTOMS OF NEUROPATHY
PHYSIOLOGICAL TESTS: ELECTROPHYSIOLOGICAL
NEUROPATHOLOGICAL TESTS

TEST SYSTEMS UTILIZED:

IN VITRO: RATS

COMPOUNDS TESTED:

ACRYLAMIDE; 2,5-HEXANEDIONE AND CARBON DISULFIDE

REMARKS:

P. SPENCER AND H. SCHAUMBURG ARE ALSO INVOLVED IN
NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.

ORGANIZATION:

BATTELLE COLUMBUS LABORATORIES
COLUMBUS, OHIO 43201

P. KURTZ (614) 424-4078, ext. 4078

TESTS PERFORMED:

SENSORY TESTS:

NEGATIVE GEOTAXIS
TAIL FLICK

MOTOR TESTS:

ROTAROD
SPONTANEOUS MOTOR ACTIVITY
GRIP STRENGTH (FORE- AND HIND-LIMB)
TREMOR (SUBJECTIVE)

COGNITIVE FUNCTIONS:

DISCRIMINATED ESCAPE TASK (M-MAZE - SHOCK AND WATER ESCAPE)
SHOCK AVOIDANCE

AROUSAL DEFICITS: STARTLE RESPONSE

PHYSIOLOGICAL TESTS:

BODY WEIGHT
RECTAL TEMPERATURE
FOOD/WATER CONSUMPTION

OTHER TESTS:

CLINICAL CHEMISTRY, HEMATOLOGY
GROSS AND HISTOLOGIC PATHOLOGY
METABOLISM, PHARMACOKINETICS
IMMUNOLOGIC FUNCTION

TEST SYSTEMS UTILIZED:

RATS, MICE (ADULT AND DEVELOPING)

COMPOUNDS TESTED:

INFORMATION IS PROPRIETARY - INDUSTRIAL AND ENVIRONMENTAL
CHEMICALS AND DRUGS.

ORGANIZATION:

BATTELLE-PACIFIC NORTHWEST LABORATORY
DEVELOPMENTAL TOXICOLOGY
BATTELLE BOULEVARD
RICHLAND, WASHINGTON 99352

M. SIKOV (509) 942-3251

TESTS PERFORMED:

MOTOR TESTS:

SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD, SURFACE RIGHTING)

GRIP STRENGTH

SWIMMING

AROUSAL DEFICITS: STARTLE RESPONSE

COGNITIVE FUNCTIONS: CONDITIONED AVOIDANCE RESPONSE (SHUTTLE BOX)

PHYSIOLOGICAL CONSUMMATORY TESTS

TEST SYSTEMS UTILIZED:

RATS, MICE, SWINE

COMPOUNDS TESTED:

PHYSICAL AGENTS - IONIZING RADIATION, PCB*, SYNFUEL MATERIALS

REMARKS:

R. H. LOVELY, F. D. ANDREW AND R. JAFFE ARE ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.

*POLYCHLORINATED BIPHENYLS

ORGANIZATION:

BOSTON UNIVERSITY
SCHOOL OF MEDICINE
BOSTON, MASSACHUSETTS 02118

C. KORNETSKY (617) 247-6212

TESTS PERFORMED:

SENSORY TESTS:

PAIN (HOT-PLATE)
REFLEX TESTING

MOTOR TESTS:

SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD)
ROTAROD

AROUSAL DEFICITS: STARTLE RESPONSE

COGNITIVE FUNCTIONS:

PASSIVE AVOIDANCE
ESCAPE BEHAVIOR (OPERANT)

PHYSIOLOGICAL:

BODY WEIGHT
GROWTH

NEUROLOGICAL TESTS: BRAIN STIMULATION (SELF-STIMULATION)

TEST SYSTEMS UTILIZED:

RATS, MICE

COMPOUNDS TESTED:

— NEUROLEPTICS, OPIATES, CNS STIMULANTS, PHENCYCLIDINE NARCOTICS
PCB'S*

REMARKS

G. FRIEDLER AND H. ROSETTE ARE ALSO INVOLVED IN NEUROTOXICOLOGY
TESTING AT THIS ORGANIZATION.

* POLYCHLORINATED BIPHENYLS

ORGANIZATION:

BRIGHAM YOUNG UNIVERSITY
ZOOLOGY DEPARTMENT
PROVO, UTAH 84601

S. BRADSHAW (801) 378-3677

TESTS PERFORMED:

MOTOR TESTS: SPONTANEOUS MOTOR ACTIVITY (JIGGLE CAGE, OPEN FIELD)

COGNITIVE TESTS: ESCAPE (SWIMMING)

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

CADMIUM, LEAD, DES*

*DIETHYLSILBESTEROL

ORGANIZATION:

CHILDREN'S HOSPITAL RESEARCH FOUNDATION
PSYCHOTERATOLOGY LABORATORY
INSTITUTE FOR DEVELOPMENTAL RESEARCH
CINCINNATI, OHIO 45229

C. VORHEES (513) 559-4451

TESTS PERFORMED:

SENSORY TESTS:

NEGATIVE GEOTAXIC (INCLINED PLANE)
SURFACE RIGHTING
OLFACCTORY ORIENTATION
PAIN (TAIL FLICK)
SWIMMING DEVELOPMENT
CLIFF AVOIDANCE
STARTLE RESPONSE (AUDITORY)

MOTOR TESTS:

SPONTANEOUS MOTOR ACTIVITY (RUNNING WHEELS, OPEN FIELD,
RESIDENTIAL ACTIVITY MAZE)
ROTAROD
FOOD GRASPING
POLE WALKING
NON-NUTRITIVE SUCKING
GRASP STRENGTH

AROUSAL DEFICITS: EMERGENCE

COGNITIVE FUNCTIONS:

AVOIDANCE (PASSIVE AND WHEEL TURN ACTIVE; AUDITORY OR
VISUAL CUES)
DISCRIMINATED AVOIDANCE (Y-MAZE)
WATER MAZE (M-MAZE AND BIEL COMPLEX MAZE)
PROBLEM SOLVING STRATEGIES (RADIAL MAZE)
SPONTANEOUS ALTERNATION

PHYSIOLOGICAL TESTS:

BODY WEIGHT
FOOD CONSUMPTION
REGIONAL BRAIN WEIGHT
NEUROHISTOLOGY (BRAIN)
TERATOLOGY
NEUROTRANSMITTERS (BRAIN)

TEST SYSTEMS UTILIZED:

RATS AND MONKEYS

CHILDREN'S HOSPITAL RESEARCH FOUNDATION (CONCLUDED)

COMPOUNDS TESTED:

- 1) FOOD ADDITIVES - MSG*, CARRAGEENAN, ASPARTAME, BHTU**, BHA***, RED DYE 3 & 40, BROMINATED VEGETABLE OIL, TBHQ****, PHENYLALANINE, SODIUM NITRITE, VITAMIN A, METHYL SALICYLATE, POTASSIUM IODIDE, ORGANIC TIN (TRIBUTYL-)
- 2) DRUGS - VALIUM, DARVON, FENFLURAMINE, COMPAZINE, NALOXONE, HYDROXYUREA, ASPIRIN, 5-AZACYTADINE, ETHANOL, ACETAZOLAMIDE, PHENOBARBITAL, DILANTAN, TRIMENTHADIONE

REMARKS:

THE FOUNDATION WILL SOON USE PRIMATES AND STUDY ANTICONVULSIVES.

* MONOSODIUM GLUTAMATE

** BUTYLATED HYDROXYTOLUENE

*** BUTYLATED HYDROXYANISOLE

**** TERTIARY BUTYL HYDROQUINONE

ORGANIZATION:

CORNELL MEDICAL SCHOOL
DEPARTMENT OF PHARMACOLOGY
NEW YORK, NEW YORK 10021

T. BAKER (212) 472-5966

TESTS PERFORMED:

MOTOR TESTS:

SPONTANEOUS MOTOR ACTIVITY
INCLINE CLIMBING
GAIT
HINDLIMB REFLEX
TIGHTENING REFLEX
MUSCLE TONE
CLONIC CONVULSIONS

PHYSIOLOGICAL TESTS:

PUPIL SIZE
PILOERECTION
ADVENTITIOUS MOVEMENT

NEUROLOGICAL TEST: MOTOR SPINDLE REFLEX (DYNAMIC AND STATIC
RESPONSE)

TEST SYSTEMS UTILIZED:

CAT

COMPOUNDS TESTED:

ORGANIC PHOSPHATES (ESPECIALLY DFP^{*}); ACRYLAMIDE

REMARKS:

THE CAT WAS CHOSEN BECAUSE THE CAT'S MOTOR SYSTEM IS VERY EFFICIENT; THEREFORE MOTOR FUNCTION PERFORMANCE IS EASILY EVALUATED.

*DIISOPROPYL PHOSPHOROFUORIDATE

ORGANIZATION:

DUKE UNIVERSITY MEDICAL CENTER
DURHAM, NORTH CAROLINA 27710

M. B. ABOU-DONIA (919) 684-2221

TESTS PERFORMED:

SENSORY TESTS: PAIN

MOTOR TESTS:

GAIT

BALANCE MAINTENANCE

TEST SYSTEMS UTILIZED:

RATS (n-HEXANE), CHICKENS, CATS (ORGANOPHOSPHOROUS ESTERS)

COMPOUNDS TESTED:

ORGANIC SOLVENTS: HEXANE; METHYL BUTYL KETONE; 2,5-HEXANEDIONE;
2,5-HEXANEDIOL .

ORGANOPHOSPHORUS ESTERS:

DEF S,S,S-TRI-n-BUTYL PHOSPHOROTRITHIOATE

DFP DIISOPROPYL PHOSPHORFLUORIDATE

DICHLORVOS 2,2-DICHLOROETHENYL DIMETHYL PHOSPHATE

EPN O-ETHYL O-4-NITROPHENYL PHENYLPHOSPHONOTHIOATE

LEPTOPHOS O-4-BROMO-2,5-DICHLOROPHENYL O-ETHYL PHENYLPHOSPHONOTHIOATE

MERPHOS S,S,S-TRI-n-BUTYL PHOSPHOROTRITHIOITE

MIPAFOX N,N'-DIISOPROPYLPHOSPHORODIAMIDIC FLUORIDE

PARATHION O,O-DIETHYL O-4-NITROPHENYL PHOSPHATE

TOTP TRI-O-TOLYL PHOSPHATE

TRICHLORPHON 2,2,2-TRICHLORO-1-HYDROXYETHYL PHOSPHONATE

CYANOENPHOS O-4-CYANOPHENYL O-ETHYL PHENYLPHOSPHONOTHIOATE

DUKE UNIVERSITY MEDICAL CENTER (CONCLUDED)

EPDP O-2,4-DICHLOROPHENYL O-ETHYL PHENYLPHOSPHONOTHIOATE

COUMAPHOS O-3-CHLORO-4-METHYLCOUMARIN-7-YL-O,O-DIETHYL
 PHOSPHOROTHIOATE

ORGANIZATION:

EASTMAN KODAK COMPANY
TOXICOLOGY DIVISION
ROCHESTER, NEW YORK

J. O'DONOGHUE (716) 458-4048

TESTS PERFORMED:

SENSORY TESTS: OPHTHALMOLOGICAL EXAM
MOTOR TESTS: REFLEX ACTIVITY
PHYSIOLOGICAL TESTS: ELECTROMYOGRAPHY

TEST SYSTEMS UTILIZED:

RATS, DOGS, CATS

COMPOUNDS TESTED:

KETONES AND CHLORINATED SOLVENTS

REMARKS:

D. TOPPING AND G. D. DIVINCENZO ARE ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.

ORGANIZATION:

ELI LILLY AND COMPANY
LILLY RESEARCH LABORATORIES
TOXICOLOGY DIVISION
GREENFIELD, INDIANA 46285

D. G. HOFFMAN (317) 462-8200

TESTS PERFORMED:

SENSORY TESTS: EXPLORATORY BEHAVIOR (HOLE-BOARD TEST)
MOTOR TESTS:

SPONTANEOUS MOTOR ACTIVITY (OPEN-FIELD)
ROTAROD

AROUSAL DEFICITS: STARTLE RESPONSE (AUDITORY)

PHYSIOLOGICAL TESTS:

BODY WEIGHT
FOOD CONSUMPTION

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

INFORMATION IS PROPRIETARY

ORGANIZATION:

EXXON CORPORATION
MEDICAL DEPARTMENT
P.O. BOX 45
LINDEN, NEW JERSEY 07036

S. LEWIS (201) 474-0100

TESTS PERFORMED:

NEUROLOGICAL TESTS: AXONAL TRANSPORT
NEUROPHYSIOLOGICAL TESTS: EFFECTS ON NEUROMUSCULAR FUNCTION (IN
VITRO TISSUE CULTURE)
HISTOPATHOLOGICAL TESTS: PURSUING GLYCOLYSIS INHIBITION BY
NEUROTOXIC AGENTS

TEST SYSTEMS UTILIZED:

RODENTS, DOGS

COMPOUNDS TESTED:

FUELS: PETROLEUM PRODUCTS, BUNKER AND MARINE FUELS, MARINE
DIESELS, PETROLEUM LUBRICANTS, GREASES, COAL LIQUEFACTION AND
GASIFICATION PRODUCTS; ORGANIC SOLVENTS; RUBBERS; PLASTICS;
FERTILIZERS

REMARKS:

DR. J. EAGEN, CHEMICAL PRODUCTS MEDICAL RESEARCH, IS ALSO
INVOLVED IN NEUROTOXICOLOGICAL TESTING AT THIS ORGANIZATION.

EXXON IS INVOLVED WITH AN INDUSTRY-WIDE NEUROTOXICITY TESTING
PROGRAM OF SOLVENTS CONDUCTED BY THE AMERICAN PETROLEUM
INSTITUTE.

ORGANIZATION:

HARVARD UNIVERSITY
DEPARTMENT OF PSYCHIATRY
BOSTON, MASSACHUSETTS 02115

P. B. DEWS (617) 732-1680

TESTS PERFORMED:

FIXED INTERVAL OPERANT BEHAVIOR

TEST SYSTEMS UTILIZED:

MICE

COMPOUNDS TESTED:

ORGANIC SOLVENTS

ORGANIZATION:

HAZLETON LABORATORIES, INC.
DIVISION OF TOXICOLOGY
VIENNA, VIRGINIA 22180

A. HOBERMAN (703) 893-5400

TESTS PERFORMED:

MOTOR TESTS: SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD)
COGNITIVE FUNCTIONS: WATER MAZE

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

INFORMATION IS PROPRIETARY

ORGANIZATION:

HOFFMAN-LaROCHE, INC.
TERATOLOGY DEPARTMENT
NUTLEY, NEW JERSEY 07110

R. M. HOAR (201) 235-4528

REMARKS:

PROCEDURES FOR POST-NATAL EVALUATION AND VALIDATION ARE BEING
DEVELOPED.

ORGANIZATION:

INDIANA UNIVERSITY
DEPARTMENT OF PSYCHOLOGY
BLOOMINGTON, INDIANA 47401

G. A. HEISE (812) 337-1330

TEST SYSTEMS UTILIZED:

RATS

REMARKS:

THIS ORGANIZATION WILL DEVELOP TESTS USING OPERANT CONDITIONING
(MEMORY, COGNITIVE FUNCTIONS).

ORGANIZATION:

INTERNATIONAL RESEARCH AND DEVELOPMENTAL CORPORATION
MATTAWAN, MICHIGAN 49071

D. RODWELL (616) 668-3336

TESTS PERFORMED:

SENSORY TESTS:

AUDITORY LOCALIZATION
VISUAL LOCALIZATION

MOTOR TESTS:

SPONTANEOUS MOTOR ACTIVITY (SURFACE RIGHTING, ACTIVITY CAGE)
ROTAROD

COGNITIVE FUNCTIONS: CLIFF AVOIDANCE

PHYSIOLOGICAL TESTS: BODY WEIGHT

TEST SYSTEMS UTILIZED:

RATS, MICE

COMPOUNDS TESTED:

INFORMATION IS PROPRIETARY

ORGANIZATION:

IOWA STATE UNIVERSITY
BEHAVIORAL TOXICOLOGY LABORATORY
AMES, IOWA 50010

W. CUNNINGHAM (515) 294-8626

TESTS PERFORMED:

SENSORY TESTS:

VISUAL DISCRIMINATION
AUDITORY DISCRIMINATION

COGNITIVE FUNCTIONS:

COMPUTERIZED PATTERN RECOGNITION
SUCCESSIVE DISCRIMINATION REVERSAL TASKS

TEST SYSTEMS UTILIZED:

MONKEYS

COMPOUNDS TESTED:

CURRENTLY IN USE: LEAD NITRATE, METHYL MERCURY CHLORIDE,
THALLIUM CHLORIDE

COMPOUNDS USED IN THE PAST: PESTICIDES, LEAD, LEAD ACETATE

REMARKS:

THE COMPUTERIZED TEST IS BELIEVED TO BE THE SHORTEST TEST AVAILABLE TO DETERMINE DEFICITS IN COGNITIVE FUNCTIONS; IT REQUIRES NO TRAINING AND CAN BE ADAPTED TO THE RAT.

PAST WORK WITH RATS AND SHEEP USED SUCCESSIVE DISCRIMINATION REVERSAL, AUDITORY VIGILANCE, AUDITORY DETECTION, SHUTTLE BOX, TWO CHOICE DISCRIMINATION, CONDITIONED AVOIDANCE, MAZE AND OPEN FIELD.

ELECTROPHYSIOLOGIC TESTS USED INCLUDED EEG AND DEPTH ELECTRODE RECORDING.

SENSORY/MOTOR TESTS HAVE INCLUDED VISUAL CLIFF AND REFLEX DEVELOPMENT.

ORGANIZATION:

JEFFERSON PROFESSIONAL SERVICES
13924 RIVERCREST DRIVE
LITTLE ROCK, ARKANSAS 72212

J. SPYKER-CRANMER (501) 661-5100

TESTS PERFORMED:

SENSORY TESTS:

PAIN
AUDITORY STIMULUS
VISUAL ORIENTATION

MOTOR TESTS:

SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD, ULTRA SOUND,
INFRARED)

ROTAROD

TREMOR

AROUSAL DEFICIT: STARTLE RESPONSE

COGNITIVE FUNCTIONS:

PASSIVE AVOIDANCE
Y-MAZE
ESCAPE

COMPOUNDS TESTED:

HYDROCARBONS, PESTICIDES, HEAVY METALS

REMARKS:

D.L. AVERY, K. BAETCKE, M. CRANMER, C. FRITH, T. GAINES,
B. HIGHMAN, S. IVY, S. LOUIE, AND C. SCOTT ARE ALSO INVOLVED
IN NEUROTOXICITY TESTING AT THIS ORGANIZATION.

ORGANIZATION:

JOHNS HOPKINS UNIVERSITY
SCHOOL OF HYGIENE AND PUBLIC HEALTH
DEPARTMENT OF ENVIRONMENTAL HEALTH SCIENCE
BALTIMORE, MARYLAND 21205

L. FECHTER (301) 955-3029

TESTS PERFORMED:

COGNITIVE FUNCTIONS: CONDITIONED AVOIDANCE (SHUTTLE BOX)
MOTOR TESTS: ACTIVITY TEST (OPEN FIELD)
AROUSAL DEFICITS: AUDITORY STARTLE RESPONSE

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

CARBON MONOXIDE, MANGANESE, LEAD

REMARKS:

Z. ANNAU IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS
ORGANIZATION.

ORGANIZATION:

JOHNS HOPKINS HOSPITAL
DEPARTMENT OF NEUROLOGY
BALTIMORE, MARYLAND 21205

J. GRIFFIN (301) 955-6435

TESTS PERFORMED:

NEUROPATHOLOGY: PERIPHERAL NERVE DISORDERS (e.g., AXONAL
TRANSPORT)

TEST SYSTEMS UTILIZED:

RATS, DOGS

COMPOUNDS TESTED:

PROPIONONITRILES; RADIATION SENSITIZERS (e.g., MISONIDAZOLE);
HEXACARBONS; ACRYLAMIDE; CIS-PLATINUM; VACOR

REMARKS:

D. PRICE, E. STANLEY AND A. PESTRONK ARE ALSO INVOLVED IN
NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.

ORGANIZATION:

JOHNS HOPKINS UNIVERSITY
SCHOOL OF HYGIENE AND PUBLIC HEALTH
DEPARTMENT OF EPIDEMIOLOGY
BALTIMORE, MARYLAND 21205

A. A. MONJAN (301) 955-3289

TESTS PERFORMED:

COGNITIVE FUNCTIONS:

AVOIDANCE (PASSIVE AND ACTIVE)
ESCAPE (SHUTTLE BOX)
OPERANT CONDITIONING

MOTOR TESTS:

SPONTANEOUS MOTOR ACTIVITY
OPEN FIELD
AROUSAL DEFICITS: STARTLE RESPONSE
PHYSIOLOGICAL TESTS

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

ALCOHOL, LEAD, VIRUSES, TERATOGENS

ORGANIZATION:

LEDERLE LABORATORIES
PEARL RIVER, NEW YORK 10962

F. CANN (914) 735-5000

TESTS PERFORMED:

SENSORY TESTS: PRESENCE OF NORMAL FUNCTION

MOTOR TESTS: REFLEX TESTING

NEUROLOGICAL TESTS: EEG

MORPHOLOGICAL TESTS: ELECTRON-MICROSCOPY

TEST SYSTEMS UTILIZED:

RODENTS AND OTHER MAMMALIAN SPECIES

COMPOUNDS TESTED

PROPRIETARY INFORMATION

ORGANIZATION:

LITTON BIONETICS, INC.
FALLS CHURCH, VIRGINIA

J. SEKERKE (703) 532-1085

TESTS PERFORMED:

OPEN FIELD

TEST SYSTEMS UTILIZED:

RATS OR MICE

COMPOUNDS TESTED:

VARIOUS (PRIVILEGED INFORMATION)

REMARKS:

THE ORGANIZATION HAS THE CAPABILITY OF STUDYING COGNITIVE FUNCTIONS USING AVOIDANCE TESTS.

ORGANIZATION:

McNEIL LABORATORIES, INC.
DRUG SAFETY EVALUATION
PORT WASHINGTON, PENNSYLVANIA

R. STEELMAN (215) 836-4500

TESTS PERFORMED:

SENSORY TESTS: HEARING
TESTING BY STIMULATION OR DEPRESSION

TEST SYSTEMS UTILIZED:

RATS, MICE, DOGS, PRIMATES, RABBITS, GUINEA PIGS, PIGS, CATS

COMPOUNDS TESTED:

THERAPEUTIC DRUGS, e.g., HALOPERIDOL; ZOMEPIRAC

REMARKS:

J. GARDOCKI, DEPARTMENT OF PHARMACOLOGY, IS ALSO INVOLVED IN
NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.

ORGANIZATION:

MEAD JOHNSON RESEARCH CENTER
MEAD-JOHNSON PHARMACEUTICAL DIVISION
DEPARTMENT OF BIOLOGIC RESEARCH
EVANSVILLE, INDIANA 47721

L. RIBLET (812) 838-5561, ext. 200

TESTS PERFORMED:

SENSORY TESTS: PAIN (TAIL FLICK, HOTPLATE)

MOTOR TESTS:

SPONTANEOUS MOTOR ACTIVITY (ACTIVITY CAGE)

ROTAROD

COGNITIVE FUNCTIONS: CONDITIONED AVOIDANCE RESPONSE (SHUTTLE BOX)

PHYSIOLOGICAL AND CONSUMMATORY TESTS

TEST SYSTEMS UTILIZED:

RATS, DOGS, MONKEYS, MICE

COMPOUNDS TESTED:

BARBITURATES, ALCOHOL

REMARKS:

H. STANTON IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.

ORGANIZATION:

MEDICAL COLLEGE OF VIRGINIA
DEPARTMENT OF ANATOMY
MCV STATION
RICHMIND, VIRGINIA 23298

R. L. JORDAN (804) 786-9000

TESTS PERFORMED:

MOTOR TESTS: SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD)

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

PCP*, TETRAETHYL TIN, ACRYLAMIDE

REMARKS:

R. BALSTAR IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.

* PHENCYCLIDINE

ORGANIZATION:

MEDICAL UNIVERSITY OF SOUTH CAROLINA
DEPARTMENT OF BIOCHEMISTRY
CHARLESTON, SOUTH CAROLINA 29403

L. MIDDAUGH (803) 792-2331

TESTS PERFORMED:

SENSORY TESTS: LIGHT-DARK DISCRIMINATION

MOTOR TESTS:

SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD, PHOTOCELL, CONTACT PLATE)

AROUSAL TESTS: STARTLE RESPONSE

COGNITIVE FUNCTIONS:

OPERANT CONDITIONING

AVOIDANCE (SHUTTLE BOX)

TEST SYSTEMS UTILIZED:

MICE

COMPOUNDS TESTED:

METHADONE, PHENOBARBITAL, AMPHETAMINE, ALCOHOL

ORGANIZATION:

MERCK, SHARPE AND DOHME
DEPARTMENT OF SAFETY ASSESSMENT
WEST POINT, PENNSYLVANIA 19486

R. ROBERTSON (215) 699-5311, ext. 5530

TESTS PERFORMED:

SENSORY TESTS: NEGATIVE GEOTAXIS (PIVOTING)

MOTOR TESTS:

SPONTANEOUS MOTOR ACTIVITY (RIGHTING REFLEX, OPEN FIELD)

CONFINED MOTOR ACTIVITY

ROTAROD

AROUSAL DEFICIT: STARTLE REFLEX (AUDITORY)

COGNITIVE FUNCTIONS:

ESCAPE

PASSIVE AVOIDANCE (STEP THROUGH)

WATER T-MAZE

PHYSIOLOGICAL TESTS

SWIMMING (ONTOGENIC IMPAIRMENT)

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

PHARMACEUTICAL (REFERENCE AND NEW) PRODUCTS

REMARKS:

D. MINSKER IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.

ORGANIZATION:

MISSISSIPPI STATE UNIVERSITY
DEPARTMENT OF ENTOMOLOGY
MISSISSIPPI STATE, MISSISSIPPI 39762

D. SHANKLAND (601) 325-4541

TESTS PERFORMED:

NEUROPHYSIOLOGICAL TESTS:

SYNAPTIC FUNCTION

ELECTROPHYSIOLOGICAL RESPONSE

BIOCHEMICAL TESTS:

ACTION ON ISOLATED SYNAPTOSONES

TRANSMITTER RELEASE ESPECIALLY WITH ACETYL-CHOLINE

TEST SYSTEMS UTILIZED:

FISH

COMPOUNDS TESTED:

BICYCLODIENES; MIREX; LINDANE

REMARKS:

J. CHAMBERS AND J. YARBOROUGH, DEPARTMENT OF BIOLOGY, ARE ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.

ORGANIZATION:

NATIONAL INSTITUTE OF ENVIRONMENTAL
HEALTH SCIENCES
LABORATORY OF BEHAVIORAL AND
NEUROLOGICAL TOXICOLOGY
RESEARCH TRIANGLE PARK, NORTH CAROLINA 27709

H. TILSON (919) 541-4320

TESTS PERFORMED:

SENSORY TESTS:

PAIN (TAIL FLICK)
NEGATIVE GEOTAXIS

MOTOR TESTS:

SPONTANEOUS MOTOR ACTIVITY (ACTIVITY CHAMBER)
GRIP STRENGTH (FORE- AND HIND-LIMB)

AROUSAL DEFICITS:

STARTLE RESPONSE
EMERGENCE

COGNITIVE FUNCTIONS: CONDITIONED AVOIDANCE (2-WAY SHUTTLE BOX)

PHYSIOLOGICAL TESTS:

BODY WEIGHT
RECTAL TEMPERATURE
CONSUMMATORY TESTS

TEST SYSTEMS UTILIZED:

RATS, MICE (ADULT AND DEVELOPING)

COMPOUNDS TESTED:

KNOWN NEUROTOXINS, HEAVY METALS, PESTICIDES, HYDROGENATED
HYDROCARBONS, VOLATILE SOLVENTS

REMARKS:

C. MITCHELL, P. CABE AND R. SQUIBB ARE INVOLVED IN BEHAVIORAL
STUDIES AT THIS ORGANIZATION.

S. BONDIE, J. HONG, L. APHOUSE AND B. WILSON ARE INVOLVED IN
NEUROCHEMICAL STUDIES AT THIS ORGANIZATION.

ORGANIZATION:

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH
BEHAVIORAL AND MOTIVATIONAL FACTORS BRANCH
BEHAVIORAL STUDIES SECTION
CINCINNATI, OHIO 45226

K. ANGER (513) 684-8383

TESTS PERFORMED:

SENSORY TESTS:

VISUAL THRESHOLD
AUDITORY THRESHOLD

MOTOR TESTS:

SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD, ACTIVITY WHEEL)
TREMOR
ROTAROD

COGNITIVE FUNCTIONS:

AVOIDANCE
DISCRIMINATION
OPERANT CONDITIONING

NEUROLOGICAL TESTS:

EEG
NERVE CONDUCTION VELOCITY

TEST SYSTEMS UTILIZED:

RATS, MONKEYS, OCCUPATIONALLY EXPOSED HUMANS

COMPOUNDS TESTED:

PERCHLORETHYLENE, 2-ETHOXYETHANOL

REMARKS:

K. NELSON, V. PUTZ, D. CHRISLIP, J. RUSSO, J. V. SETZER AND B.
L. JOHNSON ARE ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS
INSTITUTION.

HUMAN OCCUPATIONAL AND LABORATORY STUDIES HAVE INCLUDED EXPOSURE
TO LEAD, CARBON DISULFIDE, CARBON MONOXIDE, METHYL KETONE, BUTYL
KETONE, METHYL BROMIDE, CARBARYL, MMT*, LITHIUM TOCP**, METHYLENE
CHLORIDE, METHYL CHLORIDE, METHYL CHLORIDE WITH ETHANOL, CAF-
FEINE AND VALIUM, TOLUENE AND MEK***, SEPARATELY AND IN COMBINA-
TION.

* METHYL-M-TYROSINE
** TRI-O-TOLYL PHOSPHATE
*** METHYL ETHYL KETONE

ORGANIZATION:

NEW JERSEY MEDICAL SCHOOL
DEPARTMENT OF PATHOLOGY
NEWARK, NEW JERSEY

E. S. CHO (201) 456-4145

TESTS PERFORMED:

MORPHOLOGICAL TESTS:
LIGHT AND ELECTRON MICROSCOPY
TEASED-NERVE PREPARATION
ENZYME HISTOCHEMISTRY

TEST SYSTEMS UTILIZED:

CATS, RATS

COMPOUNDS TESTED:

ADRIAMYCIN, QUELAMYCIN, VINCRISTINE AND ACRYLAMIDE

REMARKS:

B. S. JORTNER IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT
THIS ORGANIZATION.

ORGANIZATION:

NEW JERSEY MEDICAL SCHOOL
DEPARTMENT OF PHARMACOLOGY
NEWARK, NEW JERSEY

H. E. LOWNDES (201) 456-5469

TESTS PERFORMED:

CLASSIC NEUROPHYSIOLOGICAL APPROACH:
CLINICAL NEUROPATHY
BIOCHEMICAL ALTERATIONS
MORPHOLOGICAL ALTERATIONS
SENSORY AND MOTOR FUNCTIONS

TEST SYSTEMS UTILIZED:

RATS, CATS

COMPOUNDS TESTED:

ORGANOPHOSPHATES (DFP* AND PARATHION); ACRYLAMIDES: IMINO
DIPROPYL NITRILE; VINCRISTINE

REMARKS:

R. D. HOWLAND, DEPARTMENT OF PHARMACOLOGY, E. S. CHO, DEPARTMENT
OF PATHOLOGY, AND B. S. JORTNER, DEPARTMENT OF PATHOLOGY, ARE
ALSO INVOLVED WITH NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.

*DIISOPROPYL PHOSPHOFUORIDATE

ORGANIZATION:

NEW YORK STATE DEPARTMENT OF MENTAL HYGIENE
DEPARTMENT OF BEHAVIORAL PHYSIOLOGY
NEW YORK, NEW YORK 10032

D. HUTCHINGS (212) 568-4000

TESTS PERFORMED:

ELECTRONIC ACTIVITY MONITOR
COGNITIVE FUNCTIONS:
OPERANT CONDITIONING
DISCRIMINATION

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

VITAMIN A EXCESS, METHADONE

ORGANIZATION:

NEW YORK STATE INSTITUTE FOR RESEARCH IN
MENTAL RETARDATION
NEUROTERATOLOGY DEPARTMENT
STATEN ISLAND, NEW YORK 10314

R. K. HADDAD (212) 698-1122, ext. 750

TESTS PERFORMED:

MOTOR TESTS:

REFLEX DEVELOPMENT
SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD)
REARING AND AMBULATION (PHOTO CELLS)

COGNITIVE FUNCTIONS:

MAZE DISCRIMINATION
OPERANT CONDITIONING
ESCAPE
AVOIDANCE
RETENTION

PHYSIOLOGICAL TESTS

NEUROLOGICAL TESTS:

EEG
SEIZURE THRESHOLDS
PKU MODELS

TEST SYSTEMS UTILIZED:

MICE, RATS, RABBITS, HAMSTERS, CATS, MONKEYS, DOGS

COMPOUNDS TESTED:

METHYL AZOXYMETHANOL ACETATE, ETHANOL, ALUMINUM

REMARKS:

A. RABE AND M. HELEE ARE ALSO INVOLVED IN NEUROTOXICOLOGY
TESTING AT THIS INSTITUTION.

ORGANIZATION:

NEW YORK UNIVERSITY MEDICAL CENTER
INSTITUTE OF ENVIRONMENTAL MEDICINE
TUXEDO, NEW YORK 10987

H. L. EVANS (212) 340-7300, EXT. 5263 (NEW YORK CITY)
(914) 351-4249 (TUXEDO)

TESTS PERFORMED:

SENSORY TESTS: COMPREHENSIVE
MOTOR TESTS: REFLEX ACTIVITY
COGNITIVE FUNCTIONS: CONDITIONED BEHAVIOR
PHYSIOLOGICAL: FOOD INTAKE AND METABOLISM

TEST SYSTEMS UTILIZED:

PRIMATES, RODENTS, FISH, BIRDS

COMPOUNDS TESTED:

ACRYLAMIDE, METALS, PESTICIDES, DRUGS, AIR POLLUTANTS:
FORMALDEHYDE, ORGANIC SOLVENTS, ASBESTOS, COMBUSTION PRODUCTS

REMARKS:

E.D. PALMES IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS
ORGANIZATION.

ORGANIZATION:

NORTH CAROLINA STATE UNIVERSITY
DEPARTMENT OF ZOOLOGY
RALEIGH, NORTH CAROLINA 27650

G. T. BARTHALMUS (919) 737-2698

TESTS PERFORMED:

SENSORY TESTS: PHOTOTAXIS BEHAVIOR USING 2,4-D *

MOTOR TESTS: LOCOMOTOR BEHAVIOR

COGNITIVE FUNCTIONS:

OPERANT CONDITIONING

AVOIDANCE (SHUTTLE BOX)

UNSIGNALLED AND SIGNALLED (ON FISH AND QUAIL)

TEST SYSTEMS UTILIZED:

MARINE ORGANISMS; GRASS SHRIMPS; GOLDFISH; JAPANESE QUAIL

COMPOUNDS TESTED:

MERCURY AND 2,4-D

* (2,4-DICHLOROPHOXY) ACETIC ACID

ORGANIZATION:

NORTHEASTERN ILLINOIS UNIVERSITY
DEPARTMENT OF PSYCHOLOGY
NEUROPSYCHOLOGY LABORATORY
CHICAGO, ILLINOIS 60625

W. PIZZI (312) 583-4050, ext. 667

TESTS PERFORMED:

SENSORY TESTS:

EXPLORATORY BEHAVIOR (HOLE-BOARD TEST)
NEGATIVE GEOTAXIS

MOTOR TESTS:

SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD, ACTIVITY WHEELS,
ACTIVITY CAGE)

ROTAROD

COGNITIVE FUNCTIONS:

MAZES

OPERANT CONDITIONING

AVOIDANCE (ACTIVE AND PASSIVE)

PHYSIOLOGICAL AND CONSUMMATORY TESTS

NEUROLOGICAL TESTS: EEG

TEST SYSTEMS UTILIZED:

MICE, RATS

COMPOUNDS TESTED:

EXCITOTOXIC AMINO ACIDS - GLUTAMATE, ASPARTATE; AMPHETAMINE,
VALIUM, LIBRIUM, AGONISTS AND ANTAGONISTS, DYES (FOOD ADDITIVES)

REMARKS:

MIDWEST BEHAVIORAL TOXICOLOGY ASSOCIATION IS BEING FORMED BY:

DR. GENE YOUNKILIS
394 DELTA ROAD
HIGHLAND PARK, ILLINOIS 60035

ORGANIZATION:

OHIO STATE UNIVERSITY
COLLEGE OF MEDICINE
COLUMBUS, OHIO 43210

D. COURI (614) 422-0168

TESTS PERFORMED:

BIOCHEMICAL TESTS
LOCOMOTOR ACTIVITY

TEST SYSTEMS UTILIZED:

HUMAN TISSUES-IN VIVO; MICE; RATS

COMPOUNDS TESTED:

CARCINOGENS: BENZO-PYRENE; AFLATOXIN AND SELINIUM
COMPOUNDS

MECHANISM: PCB *; PHENOBARBITOL; SOLVENTS

* POLYCHLORINATED BIPHENYLS

ORGANIZATION:

PHARMAKON LABORATORIES
SCRANTON, PENNSYLVANIA 18510

R. MATTHEWS (717) 344-9536

TESTS PERFORMED:

MOTOR TESTS:

SPONTANEOUS MOTOR ACTIVITY (INCLINED SCREEN)

ROTAROD

AROUSAL DEFICIT: STARTLE RESPONSE

COGNITIVE FUNCTIONS: CONDITIONED AVOIDANCE RESPONSE

NEUROLOGICAL TESTS: EEG

IRVIN RESPONSE

TEST SYSTEMS UTILIZED:

MOUSE, RAT

COMPOUNDS TESTED:

AETT OR ACETYLETHYL TETRAMETHYL TETRALIN (FRAGRANCE);
2,5-HEXANEDIONE

REMARKS:

R. NAISMITH AND R. PANASCVICH ARE ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS INSTITUTION; ORGANOPHOSPHATES WILL BE TESTED LATER.

ORGANIZATION:

RESEARCH INSTITUTE ON ALCOHOLISM
BUFFALO, NEW YORK

E. L. ABEL (716) 887-2550

TESTS PERFORMED:

MOTOR TESTS: ROTAROD

COGNITIVE FUNCTIONS:

PASSIVE AVOIDANCE (STEP-DOWN)

ACTIVE AVOIDANCE (SHUTTLE-BOX)

SPONTANEOUS ALTERNATION (T-MAZE)

WATER MAZE

HABITUATION

PHYSIOLOGICAL TESTS: BODY WEIGHT

BIOCHEMICAL TESTS

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

ALCOHOL

MARIJUANA

ORGANIZATION:

SANDOZ, INC.
DEPARTMENT OF PRECLINICAL SAFETY ASSESSMENT
EAST HANOVER, NEW JERSEY 07936

R. BAGDON (201) 386-7518

TESTS PERFORMED:

DIRECT OBSERVATION

TEST SYSTEMS UTILIZED:

RATS, DOGS, MICE, RABBITS

COMPOUNDS TESTED:

PHARMACEUTICALS
AGRICULTURAL CHEMICALS
INDUSTRIAL CHEMICALS

REMARKS:

R. J. VAN RYZIN IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT
THIS ORGANIZATION.

ORGANIZATION:

SCIENCE APPLICATIONS, INC.
DIVISION OF TOXICOLOGY
476 PROSPECT STREET, P.O. BOX 1454
LA JOLLA, CALIFORNIA 92038

S. HARRIS (714) 454-3811

TESTS PERFORMED:

SENSORY TESTS:

AUDITORY AND VISUAL MODIFICATION OF STARTLE REFLEX
NEGATIVE GEOTAXIS
RIGHTING
OLFACTOORY DISCRIMINATION
PAIN SENSITIVITY

MOTOR TESTS:

RESIDENTIAL (FIGURE 8) MAZE ACTIVITY
PIVOTING
OPEN FIELD
RUNNING WHEEL
ROTAROD

COGNITIVE FUNCTIONS:

OPERANT CONDITIONING
ACTIVE AND PASSIVE AVOIDANCE
DISCRIMINATED AVOIDANCE
WATER MAZE LEARNING

PHYSIOLOGICAL TESTS:

UNRESTRAINED WHOLE ANIMAL RESPIROMETRY
GROWTH AND PHYSICAL DEVELOPMENT

TEST SYSTEMS UTILIZED:

RAT, MOUSE

COMPOUNDS TESTED:

COMPOUNDS ARE PROPRIETARY INFORMATION OF CLIENTS

ORGANIZATION:

SEARLE LABORATORIES
DEPARTMENT OF SAFETY ASSESSMENT
BOX 5110
SKOKIE, ILLINOIS 60680

W. POOL (312) 982-4982

TESTS PERFORMED:

MOTOR TESTS:

SPONTANEOUS MOTOR ACTIVITY (INCLINED SCREEN, OPEN FIELD)
GAIT
TREMOR
ROTAROD
AROUSAL DEFICIT: STARTLE RESPONSE
PSYCHOLOGICAL TESTS

TEST SYSTEMS UTILIZED:

RATS, DOGS

COMPOUNDS TESTED:

DEVELOPMENTAL DRUGS

ORGANIZATION:

SMITH, KLINE AND FRENCH LABORATORIES
DEPARTMENT OF TOXICOLOGY
PHILADELPHIA, PENNSYLVANIA 19101

K. SZABO (215) 854-4000

TEST PERFORMED:

INFORMATION IS PROPRIETARY

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

INFORMATION IS PROPRIETARY

ORGANIZATION:

SOUTHWEST FOUNDATION FOR RESEARCH AND EDUCATION
P.O. BOX 28147
SAN ANTONIO, TEXAS 78284

I. GELLER (512) 674-1410

TESTS PERFORMED:

MOTOR TESTS:

SPONTANEOUS MOTOR ACTIVITY (ACTIVITY BOX)
NEUROMOTOR FUNCTION (FOOT SPREAD TECHNIQUE)

AROUSAL DEFICIT: STARTLE RESPONSE

COGNITIVE FUNCTIONS:

OPERANT CONDITIONING
PASSIVE AVOIDANCE
DISCRIMINATION

TEST SYSTEMS UTILIZED:

RATS

REMARKS:

THIS ORGANIZATION IS COMPARING OBSERVATIONAL TESTS WITH OPERANT TESTS.

ORGANIZATION:

SRI INTERNATIONAL
MENLO PARK, CALIFORNIA 94025

G. PRYOR (415) 326-6200, ext. 3500

TESTS PERFORMED:

SENSORY TESTS:

PAIN (TAIL FLICK)

NEGATIVE GEOTAXIS (ROTATION ORIENTATION)

MOTOR TESTS:

GRIP STRENGTH (FORE- AND HIND-LIMB)

UNDIFFERENTIATED MOTOR ACTIVITY

AROUSAL DEFICITS: STARTLE RESPONSE (AUDITORY, AIR PUFF)

COGNITIVE FUNCTIONS: MULTISENSORY CONDITIONED AVOIDANCE TASK

PHYSIOLOGICAL TESTS: BODY WEIGHT

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

ACRYLAMIDE, TETRAETHYLTIN, ARSENIC, KEPONE, METHYL MERCURY, LEAD ACETATE, d-AMPHETAMINE, MONOSODIUM SALICYCLATE, TRIETHYL LEAD CHLORIDE, HEXANE, ANTINEOPLASTIC AGENTS

ORGANIZATION:

STATE UNIVERSITY OF NEW YORK, ALBANY
DEPARTMENT OF PSYCHOLOGY
ALBANY, NEW YORK 12222

E. RILEY (518) 457-8482

TESTS PERFORMED:

MOTOR TESTS:

SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD, NOSE POKE/HEAD DIPPING)

AROUSAL DEFICIT: STARTLE RESPONSE

COGNITIVE FUNCTIONS:

REVERSAL LEARNING

OPERANT CONDITIONING

PASSIVE AVOIDANCE (STEP-THROUGH)

T-MAZE

SPONTANEOUS ALTERNATION

PHYSIOLOGICAL TESTS

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

ALCOHOL, METHADONE

ORGANIZATION:

STATE UNIVERSITY OF NEW YORK, BINGHAMTON
DEPARTMENT OF PSYCHOLOGY AND CENTER FOR
NEUROBEHAVIORAL SCIENCES
BINGHAMTON, NEW YORK 13901

L. SPEAR (607) 798-2825

TESTS PERFORMED:

MOTOR TESTS: SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD)
COGNITIVE FUNCTIONS: AVOIDANCE (ACTIVE AND PASSIVE)
PHYSIOLOGICAL TESTS

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

STIMULANTS, OPIATES, ANTIPSYCHOTICS, OTHER DRUGS, PEPTIDES

REMARKS:

L. RASTINE IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS
ORGANIZATION.

ORGANIZATION:

STATE UNIVERSITY OF NEW YORK, BUFFALO
DEPARTMENT OF PHARMACOLOGY
BUFFALO, NEW YORK

G. WINTER (716) 831-3649, 831-5122

TESTS PERFORMED:

OPERANT BEHAVIOR: AFFECT OF DRUGS ON OPERANT BEHAVIOR
GROSS BEHAVIOR: SPONTANEOUS MOTOR ACTIVITY

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

NICOTINE, CAFFIENE AND HALLUCINOGENIC AGENTS: OPIATES AND
PHENCYCLIDENE, LSD*, MESCALINE

*LYSERGIC ACID DIETHYLAMIDE

ORGANIZATION:

STERLING-WINTHROP RESEARCH INSTITUTE
DEPARTMENT OF TOXICOLOGY
RENSSELAER, NEW YORK 12144

J. C. BRADFORD (518) 445-8330

TESTS PERFORMED:

MOTOR TESTS:
RIGHTING REFLEX
GAIT
STARTLE REFLEX

TEST SYSTEMS UTILIZED:

RATS

ORGANIZATION:

SYRACUSE UNIVERSITY
BRAIN RESEARCH LABORATORY
SYRACUSE, NEW YORK 13210

M.J. WAYNER (315) 423-2923

TESTS PERFORMED:

SENSORY TESTS:

PAIN (TAIL FLINCH)
AUDITORY LOCALIZATION

MOTOR TESTS: REFLEX (GRASPING)

AROUSAL DEFICITS: STARTLE RESPONSE

PHYSIOLOGICAL TESTS:

BODY TEMPERATURE

AUTONOMIC SIGNS

ELECTROPHYSIOLOGY (EVOKED POTENTIAL; SINGLE UNIT RECORDING)

EEG

NEUROCHEMICAL TESTS

TEST SYSTEMS UTILIZED:

RATS/MICE, RABBITS

COMPOUNDS TESTED:

ACETYL PYRIDINE, ACRYLAMIDE, TOLUENE, NITROBENZENE, TRIETHYL
TIN

REMARKS:

F. BARONE IS DEVELOPING A NEUROBEHAVIORAL TEST INVOLVING
SCHEDULE-INDUCED BEHAVIOR.

ORGANIZATION:

THE PROCTOR AND GAMBLE COMPANY
HUMAN ENVIRONMENTAL SAFETY DIVISION
CINCINNATI, OHIO 45239

G. A. NOLAN (513) 977-2438

TESTS PERFORMED:

SENSORY TESTS: PAIN (PINCH TEST)
MOTOR TESTS: SPONTANEOUS MOTOR ACTIVITY (PHOTOCELL CAGE)
AROUSAL DEFICIT: STARTLE RESPONSE
COGNITIVE FUNCTIONS: CLIFF AVOIDANCE

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

HYPERVITAMINOSIS (A)

REMARKS:

THIS ORGANIZATION WILL EXPAND ITS PROGRAM TO INCLUDE MORE TESTS
AND CHEMICALS.

ORGANIZATION:

THE UPJOHN COMPANY
DEPARTMENT OF PATHOLOGY AND TOXICOLOGY RESEARCH
KALAMAZOO, MICHIGAN 49001

J. STUCKHARDT (616) 385-7179

TESTS PERFORMED:

SENSORY TESTS: VISUAL PLACING

MOTOR TESTS:

SWIMMING PERFORMANCE

ROTAROD

SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD, SURFACE RIGHTING,
PIVOTING)

AROUSAL DEFICITS: STARTLE RESPONSE (AUDITORY)

COGNITIVE FUNCTIONS: M-MAZE (SWIMMING)

PHYSIOLOGICAL TESTS

TEST SYSTEMS UTILIZED:

MICE, RATS

COMPOUNDS TESTED:

METHYL MERCURY; DEVELOPMENTAL DRUGS; OCHRATOXIN #A

REMARKS:

S. POPPE IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS
ORGANIZATION.

ORGANIZATION:

UNIVERSITY OF ARKANSAS
SCHOOL OF MEDICAL SCIENCES
DEPARTMENT OF PHARMACOLOGY
LITTLE ROCK, ARKANSAS 72201

D.E. MCMILLAN (501) 661-5516

TESTS PERFORMED:

SENSORY TESTS: PAIN, TOUCH, VISUAL, ETC.
MOTOR TESTS: LOCOMOTOR ACTIVITY
COGNITIVE FUNCTIONS: OPERANT CONDITIONING (MEMORY, CHANGE IN PERFORMANCE)

MAINLY INVOLVED IN MATCHING BEHAVIORAL EFFECTS OF DRUGS WITH BLOOD LEVELS OF DRUGS

TEST SYSTEMS UTILIZED:

RATS, MICE, PIGEONS

COMPOUNDS TESTED:

HEAVY METALS: SOLVENTS, INSECTICIDES, ETC.
PSYCHOACTIVE DRUGS

REMARKS:

G. WENGER IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.

ORGANIZATION:

UNIVERSITY OF ARKANSAS MEDICAL CENTER
DEPARTMENT OF PHARMACOLOGY
LITTLE ROCK, ARKANSAS 72201

J. SPYKER-CRANMER (501) 661-5100

TESTS PERFORMED:

SENSORY TESTS:

PAIN
AUDITORY STIMULUS
VISUAL ORIENTATION

MOTOR TESTS:

SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD, ULTRA SOUND,

INFRARED)

ROTAROD

TREMOR

AROUSAL DEFICIT: STARTLE RESPONSE

COGNITIVE FUNCTIONS:

PASSIVE AVOIDANCE
Y-MAZE
ESCAPE

COMPOUNDS TESTED:

HYDROCARBONS, PESTICIDES, HEAVY METALS

REMARKS:

D. L. AVERY IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS
ORGANIZATION.

ORGANIZATION:

UNIVERSITY OF CALIFORNIA
CALIFORNIA PRIMATE RESEARCH CENTER
PERINATAL BIOLOGY UNIT
DAVIS, CALIFORNIA 95616

M. GOLUB (916) 752-2119

TESTS PERFORMED:

MOTOR TESTS:

REFLEX DEVELOPMENT TESTS

SEIZURE THRESHOLD

AROUSAL DEFICIT: STARTLE RESPONSE

COGNITIVE FUNCTIONS:

SHOCK-AVOIDANCE CONDITIONING

RADIAL MAZE

OPERANT CONDITIONING

PHYSIOLOGICAL TESTS

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

THC*, CHLORPROMAZINE

*THIOCARBANIDINE

ORGANIZATION:

UNIVERSITY OF CHICAGO
DEPARTMENT OF BEHAVIORAL SCIENCES
CHICAGO, ILLINOIS 60637

S. P. GROSSMAN (312) 753-4715

TESTS PERFORMED:

GENERAL EFFECTS: FOOD AND WATER INTAKE

COGNITIVE FUNCTIONS:

PERFORMANCE OF PREVIOUSLY LEARNED BEHAVIOR (SKINNER AND
SHUTTLE BOXES)

CONDITIONED BEHAVIOR (LEVER PRESSING FOR FOOD; SHOCK
AVOIDANCE)

MAZE LEARNING

HISTOLOGICAL EFFECTS: NEURON CELL LOSS

TEST SYSTEMS UTILIZED:

RATS: SUBCORTICAL AREAS

COMPOUNDS TESTED:

KANIC ACID; 6-HYDROXYDOPAMINE ARE INJECTED INTO SUBCORTICAL
AREAS

REMARKS:

A. HALARIS, DEPARTMENT OF PSYCHIATRY, AND C. MUÑOZ, DEPARTMENT
OF BEHAVIORAL SCIENCES, ARE ALSO INVOLVED IN NEUROTOXICOLOGY
TESTING AT THIS ORGANIZATION.

ORGANIZATION:

UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE
KETTERING LABORATORY
CINCINNATI, OHIO 45267

R. BORNSCHEIN (513) 872-5713

TESTS PERFORMED:

SENSORY TESTS:

NEGATIVE GEOTAXIS
VISUAL DISCRIMINATION

MOTOR TESTS:

SPONTANEOUS MOTOR ACTIVITY (RUNNING WHEEL, JIGGLE CAGE,
PHOTOCELL ACTIVITY CAGE, OPEN FIELD, REFLEXES)

GAIT

CIRCADIAN ACTIVITY

TREMOR

ROTAROD

COGNITIVE FUNCTIONS:

AVOIDANCE (ACTIVE AND PASSIVE)
SCHEDULE-CONTROLLED BEHAVIOR

DISCRIMINATION (T-MAZE)

NEUROPHYSIOLOGICAL: EEG

METABOLIC TESTS

TEST SYSTEMS UTILIZED:

MICE, RATS

COMPOUNDS TESTED:

LEAD, CADMIUM, HYDROCARBON SOLVENTS, AUTOMOBILE EXHAUST,
ACRYLAMIDE, ETHYLNITROSUREA, DRUGS

REMARKS:

L. HASTINGS, L. RAFFLES, H. ZENICK, S. LASLEY, A. MICHAELSON,
AND G. COOPER ARE ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT
THIS ORGANIZATION.

ORGANIZATION:

UNIVERSITY OF CINCINNATI MEDICAL CENTER
DEPARTMENT OF ENVIRONMENTAL HEALTH
CINCINNATI, OHIO 45267

L. HASTINGS (513) 872-5711

TESTS PERFORMED:

SENSORY TESTS:

VISUAL DISCRIMINATION
PAIN (TAIL FLICK)

MOTOR TESTS: SPONTANEOUS MOTOR ACTIVITY (RUNNING WHEEL,
PHOTOCELL ACTIVITY CAGE, JIGGLE PLATFORM)

AROUSAL DEFICIT: STARTLE RESPONSE

COGNITIVE FUNCTIONS: OPERANT CONDITIONING

PHYSIOLOGICAL TESTS: AUTOMATIC SIGNS (HEART RATE)

TEST SYSTEMS UTILIZED:

RATS, MICE

COMPOUNDS TESTED:

HEAVY METALS - LEAD, CADMIUM

SOLVENTS - METHYL CHLOROFORM, METHYL CHLORIDE

REMARKS:

H. ZENICK IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS
ORGANIZATION.

ORGANIZATION:

UNIVERSITY OF KANSAS MEDICAL CENTER
MENTAL RETARDATION RESEARCH CENTER
KANSAS CITY, KANSAS 66103

S. NORTON

TESTS PERFORMED:

MOTOR TESTS:

SPONTANEOUS MOTOR ACTIVITY (RIGHTING REFLEX, PHOTOCELL
ACTIVITY CAGE, OPEN FIELD, WALKING)
GRIP STRENGTH

AROUSAL DEFICITS: AUDITORY STARTLE

COGNITIVE FUNCTIONS: RESIDENTIAL MAZE

DRUG CHALLENGE

TEST SYSTEMS UTILIZED:

RATS, CHICKENS

COMPOUNDS TESTED

HYPOTHYROID COMPOUNDS, IONIZING RADIATION, CARBON MONOXIDE

REMARKS:

THE COMPUTERIZED PATTERNrecognition TEST IS USED WITH
AMPHETAMINE-EXPOSED RATS INVOLVING THE USE OF PHOTOGRAPHIC
METHODS TO DETERMINE BEHAVIORAL SEQUENCES.

ORGANIZATION:

UNIVERSITY OF MICHIGAN MEDICAL CENTER
PATHOLOGY DEPARTMENT
ANN ARBOR, MICHIGAN 48109

S. P. HICKS (313) 764-8170

TESTS PERFORMED:

MOTOR DEVELOPMENT (GAIT ANALYSIS)

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

RADIATION

REMARKS:

C. D'AMATO IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.

ORGANIZATION:

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL
ANN ARBOR, MICHIGAN 48109

W. STEBBINS (313) 764-8532

TESTS PERFORMED:

SENSORY TESTS: AUDITORY RESPONSE UNDER OPERANT CONDITIONS
MOTOR TESTS: REACTION TIME TO STIMULUS
MORPHOLOGICAL TESTS: INNER EAR AND COCHLEAR (RECEPTOR CELLS)
FUNCTION

TEST SYSTEMS UTILIZED:

MONKEYS, CHINCHILLAS, GUINEA PIGS, CATS

COMPOUNDS TESTED:

NOISE, AMINOGLYCOCIDE ANTIBIOTICS, DIURETICS, SALICYLATES.
QUININE

REMARKS:

D. MOODY, L. DAVIDSON, AND C. PROSEN ARE ALSO INVOLVED IN
NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.

ORGANIZATION:

UNIVERSITY OF MINNESOTA
DEPARTMENT OF PHARMACOLOGY
MINNEAPOLIS, MINNESOTA 55455

S. SPARBER (612) 373-0314

TESTS PERFORMED:

MOTOR TESTS: SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD)

COGNITIVE FUNCTIONS:

OPERANT CONDITIONING

LEARNING

CONDITIONED BEHAVIOR (POSITIVE REINFORCEMENT)

BIOCHEMICAL TESTS

TEST SYSTEMS UTILIZED:

RATS, MICE, CHICKENS

COMPOUNDS TESTED:

AMPHETAMINES, OPIATES, METHYL MERCURY

REMARKS:

THIS ORGANIZATION IS SEARCHING FOR APPROPRIATE TESTING METHODS
TO TEST ENVIRONMENTAL EXPOSURE LEVELS FOR THE PURPOSE OF DEFIN-
ING THRESHOLD LEVELS.

ANY FURTHER WORK IN THIS FIELD SHOULD INCLUDE A DISCUSSION WITH
DR. SPARBER.

ORGANIZATION:

UNIVERSITY OF MISSISSIPPI
DEPARTMENT OF PHARMACOLOGY
UNIVERSITY, MISSISSIPPI 38677

M. DAVIS (601) 232-7330

TESTS PERFORMED:

COGNITIVE FUNCTIONS: CONDITIONED AVOIDANCE (SHUTTLE BOX)
RESPONSE

SENSORY TESTS: PAIN (TAIL FLICK)

PHYSIOLOGICAL TESTS

MOTOR TESTS:

TREADMILL ROTAROD

SPONTANEOUS MOTOR ACTIVITY (PHOTOCELL, OPEN FIELD)

TEST SYSTEMS UTILIZED:

RATS, DOGS, MONKEYS

COMPOUNDS TESTED:

ABUSE DRUGS - CANNABIS, COCAINE METABOLITES, HALLUCINOGENS

REMARKS:

J. BEDFORD AND M. WILSON ARE WORKING WITH ALCOHOL AND OPERANT BEHAVIOR.

ORGANIZATION:

UNIVERSITY OF NORTH CAROLINA
SCHOOL OF MEDICINE
BIOLOGICAL SCIENCES RESEARCH CENTER
DEPARTMENT OF PSYCHIATRY'S PHARMACOLOGY
CHAPEL HILL, NORTH CAROLINA 27514

DR. RICHARD MAILMAN (919) 966-3081

TESTS PERFORMED:

MOTOR TESTS:

SPONTANEOUS MOTOR ACTIVITY (JIGGLE CAGE)
DRUG-INDUCED SPONTANEOUS MOTOR ACTIVITY
STEREOTYPED BEHAVIOR
DRUG-INDUCED STEREOTYPED BEHAVIOR
ROTAROD
RIGHTING REFLEX

PHYSIOLOGICAL TESTS:

RESPIRATION
ECG
BODY WEIGHT
CONSUMPTION

COGNITIVE TESTS:

OPERANT CONDITIONING

TEST SYSTEMS UTILIZED:

RATS, MICE

COMPOUNDS TESTED:

PRO AND ANTIDOPAMINARGIC DRUGS
ENVIRONMENTAL POLLUTANTS (METALS, PCBs *)

REMARKS:

DR. GEORGE BREESE IS ALSO INVOLVED WITH NEUROTOXICOLOGY TESTING
AT THIS ORGANIZATION.

* POLYCHLORINATED BIPHENYLS

ORGANIZATION:

UNIVERSITY OF NORTH CAROLINA
BIOSCIENCES RESEARCH CENTER
CHAPEL HILL, NORTH CAROLINA 27514

D. MILLER (919) 966-3081

TESTS PERFORMED:

COGNITIVE FUNCTIONS:

PASSIVE AVOIDANCE TEST (LICK SUPPRESSION)
OPERANT CONDITIONING (2-LEVER ALTERATION)

PHYSIOLOGICAL TESTS

MOTOR TESTS: SPONTANEOUS MOTOR ACTIVITY (PHOTOCELL CAGE)

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

ORGANOTIN (TRIETHYL-, TRIMETHYL-)

REMARKS:

L. D. GRANT IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS
ORGANIZATION.

ORGANIZATION:

UNIVERSITY OF NORTH CAROLINA
CHAPEL HILL, NORTH CAROLINA 27514

M. KRIGMAN (919) 966-4584

TESTS PERFORMED:

BIOCHEMICAL TESTS: MYELIN AND AXONAL TRANSPORT
NEUROPHARMACOLOGICAL TESTS: PUTATIVE TRANSMITTERS
MORPHOLOGICAL TESTS: LIGHT AND ELECTRON MICROSCOPY

TEST SYSTEMS UTILIZED:

RATS, PIGEONS

COMPOUNDS TESTED:

INORGANIC LEAD; TRIMETHYL AND TRIETHYL TIN; CADMIUM; TRIPROPYL
TIN, TRIBUTYL TIN; TRICYCLOHEXYL TIN and TRIPHENYL TIN;
TRIMETHYL AND TRIETHYL LEAD; TRIMETHYL GERMANIUM

ORGANIZATION:

UNIVERSITY OF ROCHESTER
DEPARTMENT OF PSYCHOLOGY
ROCHESTER, NEW YORK 14642

J. ISON (716) 275-2453

TESTS PERFORMED:

REFLEX MODIFICATION: JUMPING BEHAVIOR PRECEDED BY "STARTLE-FLINCH"

TEST SYSTEMS UTILIZED:

RATS, MICE

COMPOUNDS TESTED:

CADMUM; MISONIDAZOLE; DIAZEPAM; METHYL MERCURY

REMARKS:

P. CONROY, CANCER CENTER; C. KELLOG, DEPARTMENT OF PSYCHIATRY;
B. WEISS, RADIATION BIOLOGY AND BIOPHYSICS; AND V. LATIES,
RADIATION BIOLOGY AND BIOPHYSICS, ARE ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.

ORGANIZATION:

UNIVERSITY OF SOUTHERN CALIFORNIA
BIOLOGICAL SCIENCES SECTION
SCHOOL OF PHARMACY
LOS ANGELES, CALIFORNIA 90033

J. SCHIH (213) 226-2565

TESTS PERFORMED:

BIOCHEMICAL TESTS:
HORMONAL SECRETION
RECEPTOR BINDING

TEST SYSTEMS UTILIZED:

RATS, MICE

COMPOUNDS TESTED:

ANTIDEPRESSANTS; SEROTONIN-UPTAKE BLOCKERS; RECEPTOR AGONIST AND
ANTAGONISTS

REMARKS:

S. CHENG AND H. YOUNG ARE ALSO INVOLVED IN NEUROTOXICOLOGY
TESTING AT THIS ORGANIZATION.

ORGANIZATION:

UNIVERSITY OF WASHINGTON
DEPARTMENT OF PSYCHOLOGY
SEATTLE, WASHINGTON

B. BURBACHER (206) 543-9300

TESTS PERFORMED:

DEVELOPMENTAL BEHAVIOR:

BASIC REFLEXES
HEART RATE
TEMPERATURE
SUCKING RESPONSE IMMEDIATELY AFTER BIRTH
SKELETAL AND VISUAL DEVELOPMENT

TEST SYSTEMS UTILIZED:

RATS, MICE, MONKEYS

COMPOUNDS TESTED:

METHYL MERCURY, CADMIUM, ARSENIC AND OTHER HEAVY METALS

REMARKS:

K. MOTTE, DEPARTMENT OF PATHOLOGY; W. CHEN, DEPARTMENT OF PATHOLOGY; AND DR. SHAW, DEPARTMENT OF PATHOLOGY, ARE ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS ORGANIZATION.

ORGANIZATION:

UNIVERSITY OF WISCONSIN, MADISON
DEPARTMENT OF PSYCHOLOGY
PRIMATE LABORATORY
MADISON, WISCONSIN 53706

R. E. BOWMAN (608) 263-3550

TESTS PERFORMED:

MOTOR TESTS: SPONTANEOUS MOTOR ACTIVITY (ACTIVITY BOX)
COGNITIVE FUNCTIONS:

DISCRIMINATION (MAZE)
OPERANT CONDITIONING

TEST SYSTEMS UTILIZED:

MONKEYS, RATS

COMPOUNDS TESTED:

PCB*, PBB**, DIOXIN, HALOTHANE

REMARKS:

J. ALLEN AND R. GOY ARE ALSO INVOLVED IN NEUROTOXICOLOGY TESTING
AT THIS ORGANIZATION.

* POLYCHLORINATED BIPHENYLS
** POLYBROMINATED BIPHENYLS

ORGANIZATION:

U.S. ARMED FORCES RADIobiology RESEARCH INSTITUTE
BEHAVIORAL SCIENCES DEPARTMENT
EXPERIMENTAL PSYCHOLOGY DIVISION
BETHESDA, MARYLAND 20014

R. YOUNG (703) 295-0114

TESTS PERFORMED:

SENSORY TESTS: VISUAL DISCRIMINATION
MOTOR TESTS: SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD)
COGNITIVE FUNCTIONS:
 OPERANT CONDITIONING
 DISCRIMINATED AVOIDANCE
 SIDMAN AVOIDANCE
CONSUMMATORY AND PHYSIOLOGICAL TESTS
NEUROLOGICAL TESTS:
 EEG
 NERVE CONDUCTION VELOCITY

TEST SYSTEMS UTILIZED:

RODENTS, MONKEYS, MINIATURE PIGS

COMPOUNDS TESTED:

IONIZING RADIATION, NITRATE ESTERS, #5 FUELS, ACRYLAMIDE, LEAD,
METHYL MERCURY, ETHANOL

REMARKS:

V. BOGO IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS
INSTITUTION.

ORGANIZATION:

U.S. ENVIRONMENTAL PROTECTION AGENCY
NEUROTOXICOLOGY DIVISION
MD-74B
RESEARCH TRIANGLE PARK, NORTH CAROLINA 27711

L. REITER (919) 541-2671

TESTS PERFORMED:

MOTOR TESTS:

SPONTANEOUS LOCOMOTOR ACTIVITY (FIGURE-8-MAZE, OPEN FIELD)
NEUROMOTOR FUNCTION (FOOT SPREAD TECHNIQUE, GAIT)

AROUSAL DEFICIT: STARTLE RESPONSE (FORCE PLATFORM)

COGNITIVE FUNCTIONS:

PASSIVE AVOIDANCE (STEP-THROUGH)
DEVELOPMENTAL NEUROTOXICITY TESTING

TEST SYSTEMS UTILIZED:

RATS, MICE

COMPOUNDS TESTED:

HEAVY METALS, ALKYL TINS, PESTICIDES, TOXIC SUBSTANCES

REMARKS:

P. RUPPERT IS A MEMBER OF THIS ORGANIZATION.

ORGANIZATION:

U.S. ENVIRONMENTAL PROTECTION AGENCY
NEUROTOXICOLOGY LABORATORY
RESEARCH TRIANGLE PARK, NORTH CAROLINA 27711

R. PETTINELLI (919) 541-2450

TESTS PERFORMED:

COGNITIVE FUNCTIONS:
DISCRIMINATION (T-MAZE)
OPERANT CONDITIONING

TEST SYSTEMS UTILIZED:

RATS, MONKEYS

COMPOUNDS TESTED:

PESTICIDES

REMARKS:

M. GAGE AND R. G. MCPHAIL ARE ALSO INVOLVED IN NEUROTOXICOLOGY
TESTING AT THIS ORGANIZATION.

ORGANIZATION:

U.S. ENVIRONMENTAL PROTECTION AGENCY
TOXIC EFFECTS BRANCH
HEALTH REVIEW DIVISION
OFFICE OF TESTING AND EVALUATION
OFFICE OF PESTICIDES AND TOXIC SUBSTANCES

W. SETTE (TS-792) (703) 755-4863

REMARKS:

T. LEVINE AND J. MURPHY ARE INVOLVED IN PROPOSING RULES AND
REGULATIONS REGARDING BEHAVIORAL TERATOLOGY AND BEHAVIORAL
TOXICOLOGY.

ORGANIZATION:

U.S. FOOD AND DRUG ADMINISTRATION
BUREAU OF FOODS
DIVISION OF TOXICOLOGY
HFF-162
WASHINGTON, D.C. 20204

T. SOBOTKA (202) 245-1304

TESTS PERFORMED:

SENSORY TESTS:

PAIN

NEGATIVE GEOTAXIS

MOTOR TESTS:

SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD, INCLINED SCREEN)

ROTAROD

CIRCADIAN ACTIVITY

AROUSAL DEFICITS: STARTLE RESPONSE

COGNITIVE FUNCTIONS:

SCHEDULE-CONTROLLED BEHAVIOR

ESCAPE

AVOIDANCE (ACTIVE AND PASSIVE)

DISCRIMINATION (MAZE)

RETENTION

PHYSIOLOGICAL TESTS: AUTONOMIC SIGNS

TEST SYSTEMS UTILIZED:

RATS, DOGS, PIGS

COMPOUNDS TESTED:

GRAS COMPOUNDS

FOOD ADDITIVES

CNS STIMULANTS:

AMPHETAMINE

CAFFEINE

MYCOTOXINS

ACRYLAMIDE

HEAVY METALS (LEAD, CADMIUM, METHYL MERCURY)

ORGANIZATION:

WARNER-LAMBERT/PARKE-DAVIS
ANN ARBOR, MICHIGAN 48106

J. SCHARDEIN (313) 994-3500, ext. 339

TESTS PERFORMED:

SENSORY TESTS:

PAIN (TAIL FLINCH)
VISUAL PLACING

MOTOR TESTS:

SPONTANEOUS MOTOR ACTIVITY (OPEN FIELD)
GRIP STRENGTH (TRACTION TEST)

AROUSAL DEFICITS: STARTLE REFLEX (AUDITORY)
COGNITIVE FUNCTIONS: CONDITIONED AVOIDANCE
PHYSIOLOGICAL TESTS

TEST SYSTEMS UTILIZED:

RATS

COMPOUNDS TESTED:

DEVELOPMENTAL COMPOUNDS

REMARKS:

J. PETRERE IS ALSO INVOLVED IN NEUROTOXICOLOGY TESTING AT THIS
ORGANIZATION.

ORGANIZATION:

WASHINGTON STATE UNIVERSITY
DEPARTMENT OF PSYCHOLOGY
PULMAN, WASHINGTON 99164

R. H. ETTINGER (509) 335-2631

REMARKS:

H. ETTINGER IS DEVELOPING MORE SENSITIVE SCREENING PROCEDURES,
ESPECIALLY OPERANT CONDITIONING, USING MULTIPLE AND CONCURRENT
REINFORCEMENT SCHEDULES.

ORGANIZATION:

WASHINGTON UNIVERSITY
SCHOOL OF MEDICINE
DEPARTMENT OF PHARMACOLOGY
ST. LOUIS, MISSOURI

J. FERRENDELLI (314) 454-2309

TESTS PERFORMED:

BEHAVIORAL TESTS: MOTOR AND SENSORY FUNCTIONS BY OBSERVATION
NEUROLOGICAL:

EEG

SINGLE-CELL ACTIVITY

BIOCHEMICAL TESTS:

NEUROTRANSMITTER'S RELATIONSHIP WITH DRUGS

CEREBRAL RESPIRATION

ENERGY AND CARBOHYDRATE METABOLISM

TEST SYSTEMS UTILIZED:

MICE, RATS, GUINEA PIGS

COMPOUNDS TESTED:

THERAPEUTIC DRUGS; e.g., ANTICONVULSIVE AND CONVULSIVE DRUGS

REMARKS:

T. CICERO, AT THE DEPARTMENT OF PSYCHIATRY, IS TESTING NARCOTIC AGENTS.

APPENDIX A
INDEX OF INDIVIDUALS IN THE DIRECTORY

**APPENDIX A
INDEX OF INDIVIDUALS IN THE DIRECTORY**

<u>NAME</u>	<u>ORGANIZATION</u>
Abel, E. L.	Research Institute of Alcoholism
Abou-Donia, M. B.	Duke University Medical Center
Allen, T.	University of Wisconsin
Andrew, F. D.	Battelle-Pacific Northwest Laboratory
Anger, K.	National Institute for Occupational Safety and Health
Annau, Z.	Johns Hopkins University
Aphouse, L.	National Institute of Environmental Health Sciences
Avery, D. L.	University of Arkansas Medical Center
Baetke, K.	Jefferson Professional Services
Bagdon, R.	Sandoz, Inc.
Baker, T.	Cornell Medical School
Balstar, R.	Medical College of Virginia
Barone, F.	Brain Research Laboratory
Barthalmus, G. T.	North Carolina State University
Bedford, J.	University of Mississippi
Bogo, V.	U.S. Armed Forces Radiobiology Research Institute
Bondie, S.	National Institute of Environmental Health Sciences
Bornschein, R.	University of Cincinnati College of Medicine
Bowman, R. E.	University of Wisconsin
Bradford, J. C.	Sterling-Winthrop Research Institute
Bradshaw, S.	Brigham Young University
Breese, G.	University of North Carolina

<u>NAME</u>	<u>ORGANIZATION</u>
Burbacher, B.	University of Washington
Butcher, R.	Children's Hospital Research Foundation
Cabe, P.	National Institute of Environmental Health Sciences
Chambers, J.	Mississippi State University
Cann, F.	Lederle Laboratories
Chen, W	University of Washington
Cheng, S.	University of Southern California
Cho, E. S.	New Jersey Medical School
Chrislip, D.	National Institute for Occupational Safety and Health
Cicero, T.	Washington University
Conroy, P.	University of Rochester Cancer Center
Cooper, G.	University of Cincinnati College of Medicine
Couri, D.	Ohio State University
Crammer, M.	Jefferson Professional Services
Crow, D.	Albert Einstein College of Medicine
Cunningham, W.	Iowa State University
D'Amato, C.	University of Michigan Medical Center
Davidson, L.	University of Michigan Medical School
Davis, M.	University of Mississippi
Dews, P. B.	Harvard University
DiVincenzo, G. D.	Eastman Kodak Company
Eagen, J.	Exxon Corporation
Ettinger, R. H.	Washington State University

<u>NAME</u>	<u>ORGANIZATION</u>
Evans, H. L.	New York University Medical Center
Fechter, L.	Johns Hopkins University
Ferrendelli, J.	Washington University
Friedler, G.	Boston University
Frith, C.	Jefferson Professional Services
Gage, M.	U.S. Environmental Protection Agency, Research Triangle Park
Gaines, T.	Jefferson Professional Services
Gardocki, J.	McNeil Laboratories, Inc.
Geller, I.	Southwest Foundation for Research and Education
Golub, M.	University of California, Davis
Goy, R.	University of Wisconsin
Grant, L.D.	University of North Carolina
Griffin, J.	Johns Hopkins Hospital
Grossman, S. P.	University of Chicago
Haddad, R. K.	New York State Institute for Research in Mental Retardation
Halaris, A.	University of Chicago
Harris, S.	Science Applications, Inc.
Hastings, L.	University of Cincinnati College of Medicine
Heise, G. A.	Indiana University
Helee, M.	New York State Institute for Research in Mental Retardation
Hicks, S. P.	University of Michigan Medical Center
Highman, B.	Jefferson Professional Services

AD-A104 225

MITRE CORP MCLEAN VA METREK DIV
EVALUATION OF SHORT-TERM BIOASSAYS TO PREDICT FUNCTIONAL IMPAIR--ETC(U)
OCT 80 P GREENAWAY, J KONZ
DAMD17-78-C-8068
WP-79W00681

F/G 6/20

DAMD17-78-C-8068

NL

UNCLASSIFIED

2 of 2
40A
04229

END
DATE
FILED
10-8-81
DTIC

<u>NAME</u>	<u>ORGANIZATION</u>
Hoar, R. M.	Hoffmann-LaRoche, Inc.
Hoberman, A.	Hazleton Laboratories, Inc.
Hoffman, D. G.	Eli Lilly and Company
Hong, J.	National Institute of Environmental Health Sciences
Howland, R. D.	New Jersey Medical School
Hutchings, D.	New York State Department of Mental Hygiene
Ison, J.	University of Rochester
Ivy, S.	Jefferson Professional Services
Jaffe, R.	Battelle-Pacific Northwest Laboratory
Johnson, B. L.	National Institute for Occupational Safety and Health
Jordan, R. L.	Medical College of Virginia
Jortner, B. S.	New Jersey Medical School
Kellog, C.	University of Rochester
Kornetsky, C.	Boston University
Krigman, M.	University of North Carolina
Kurtz, P.	Battelle Columbus Laboratories
Lasley, S.	University of Cincinnati College of Medicine
Laties, V.	University of Rochester
Levine, T.	U.S. Environmental Protection Agency, Washington, D.C.
Lewis, S.	Exxon Corporation
Louie, S.	Jefferson Professional Services
Lovely, R. H.	Battelle-Pacific Northwest Laboratory

<u>NAME</u>	<u>ORGANIZATION</u>
Lowndes, H. E.	New Jersey Medical School
Mailman, R.	University of North Carolina
Matthews, R.	Pharmakon Laboratories
McMillan, D. E.	University of Arkansas School of Medical Sciences
McPhail, R. G.	U.S. Environmental Protection Agency, Research Triangle Park
Michaelson, A.	University of Cincinnati College of Medicine
Middaugh, L.	Medical University of South Carolina
Miller, D.	University of North Carolina
Minsker, D.	Merck, Sharpe and Dohme
Mitchell, C.	National Institute of Environmental Health Sciences
Monjan, A. A.	Johns Hopkins University
Moody, D.	University of Michigan Medical School
Mottet, K.	University of Washington
Munoz, C.	University of Chicago
Murphy, J.	U.S. Environmental Protection Agency, Washington, D.C.
Naismith, R.	Pharmakon Laboratories
Nelson, K.	National Institute for Occupational Safety and Health
Nolan, G. A.	The Proctor and Gamble Company
Norton, S.	University of Kansas Medical Center
O'Donoghue, J.	Eastman Kodak Company
Palmes, E. D.	New York University Medical Center

<u>NAME</u>	<u>ORGANIZATION</u>
Panascvich, R.	Pharmakon Laboratories
Pestronk, A.	Johns Hopkins Hospital
Petrere, J.	Warner-Lambert/Parke-Davis
Pettinelli, R.	U.S. Environmental Protection Agency, Research Triangle Park
Pizzi, W.	Northeastern Illinois University
Pool, W.	Searle Laboratories
Poppe, S.	The Upjohn Company
Price, D.	Johns Hopkins Hospital
Prosen, C.	University of Michigan Medical School
Pryor, G.	SRI International
Putz, V.	National Institute for Occupational Safety and Health
Rabe, A.	New York State Institute for Research in Mental Retardation
Raffles, L.	University of Cincinnati College of Medicine
Rastine, L.	State University of New York, Binghamton
Reiter, L.	U.S. Environmental Protection Agency, Research Triangle Park
Riblet, L.	Mead Johnson Research Center
Riley, E.	State University of New York, Albany
Robertson, R.	Merck, Sharpe and Dohme
Rodwell, D.	International Research and Development Corporation
Rosette, H.	Boston University

<u>NAME</u>	<u>ORGANIZATION</u>
Ruppert, P.	U.S. Environmental Protection Agency, Research Triangle Park
Russo, J.	National Institute for Occupational Safety and Health
Sabri, M.	Albert Einstein College of Medicine
Schardein, J.	Warner-Lambert/Parke-Davis
Schaumburg, H.	Albert Einstein College of Medicine
Schih, J.	University of Southern California
Scott, C.	Jefferson Professional Services
Sekerke, J.	Litton Bionetics, Inc.
Sette, W.	U.S. Environmental Protection Agency, Washington, D. C.
Setzer, J. V.	National Institute for Occupational Safety and Health
Shaw, C.	University of Washington
Shankland, D.	Mississippi State University
Sikov, M.	Battelle-Pacific Northwest Laboratory
Sobotka, T.	U.S. Food and Drug Administration
Sparber, S.	University of Minnesota
Spear, L.	State University of New York, Binghamton
Spencer, P.	Albert Einstein College of Medicine
Spyker-Cranmer, J.	University of Arkansas Medical Center
Squibb, R.	National Institute of Environmental Health Sciences
Stanley, E.	Johns Hopkins Hospital
Stanton, H.	Mead Johnson Research Center

<u>NAME</u>	<u>ORGANIZATION</u>
Stebbins, W.	University of Michigan Medical School
Steelman, R.	McNeil Laboratories, Inc.
Stuckhardt, J.	The Upjohn Company
Szabo, K.	Smith, Kline and French Laboratories
Tilson, H.	National Institute of Environmental Health Sciences
Topping, D.	Eastman Kodak Company
Van Ryzin, R. J.	Sandoz, Inc.
Vorhees, C.	Children's Hospital Research Foundation
Wayner, J.	Syracuse University
Wenger, G.	University of Arkansas
Weiss, B.	University of Rochester
Wilson, B.	National Institute of Environmental Health Sciences
Wilson, M.	University of Mississippi
Winter, G.	State University of New York, Buffalo
Yarborough, J.	Mississippi State University
Youkilis, G.	Midwest Behavioral Toxicology Association
Young, H.	University of Southern California
Young, R.	U.S. Armed Forces Radiobiology Research Institute
Zenick, H.	University of Cincinnati College of Medicine

APPENDIX B

**INDIVIDUALS UNAVAILABLE FOR COMMENT
BUT LIKELY TO BE ACTIVE IN
NEUROBEHAVIORAL TESTING**

APPENDIX B

**INDIVIDUALS UNAVAILABLE FOR COMMENT
BUT LIKELY TO BE ACTIVE IN
NEUROBEHAVIORAL TESTING**

RESEARCHER AND ORGANIZATION

Dr. David L. Avery
Department of Pharmacology
University of Arkansas Medical Sciences
Little Rock, Arkansas 72205

Dr. Morris Cranmer
Jefferson Professional Services
Box 3397
Little Rock, Arkansas 72203

Ms. Sandra L. Morseth
Department of Psychology
Washington State University
Pullman, Washington 99164

Dr. D. Wooley
University of California
Davis, California

Dr. John Wright
Department of Psychology
Washington State University
Pullman, Washington 99164

DISTRIBUTION LIST

25 copies

Commander
US Army Medical Bioengineering
Research and Development Laboratory
ATTN: SGRD-UBG
Fort Detrick
Frederick, MD 21701

4 copies

USAMRDC (SGRD-RMS)
Fort Detrick
Frederick, MD 21701

12 copies

Defense Technical Information Center (DTIC)
ATTN: DTIC-DDA
Cameron Station
Alexandria, VA 22314

1 copy

Dean
School of Medicine
Uniformed Services University of the
Health Sciences
4301 Jones Bridge Road
Bethesda, MD 20014

1 copy

Commandant
Academy of Health Sciences, US Army
ATTN: AHS-COM
Fort Sam Houston, TX 78234

1 copy

Commander
US Army Medical Bioengineering
Research and Development Laboratory
ATTN: SGRD-UBD-A/Librarian
Fort Detrick
Frederick, MD 21701

